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On the Gustatory Organs of *Sciurus hudsonius*

by

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(With pl. XI.)

General Description of the Tongue. — The organ measures 28 mm. in length, its greatest transverse diameter is 7 mm. and, anteriorly, it is free from the floor of the mouth for 11 mm. The posterior division has a thickness of 6,5 mm., and is very slightly raised above the level of the anterior division. The anterior dorsal surface is impressed for some distance by a rather deep median groove which disappears at the tip. The greater part of the papillated surface, including the lateral margins is covered with fine, closely-set, tactile and mechanical papillae. At the extreme posterior region of the dorsum are a number of coarse, fleshy, recurved conical papillae. Papillae of the fungiform type are only fairly abundant. They are distributed over the dorsal surface, and are sparingly scattered upon the sides of the tongue. Near the base of the organ are three circumvallate papillae. They are arranged in a triangle with the apex turned backward. On each side of the tongue, near the base, is a well-formed papilla foliata, the inner border of which is fringed with papillae, the latter being continued on to the inner side of the base of the glosso-palatine arch. Some of the papillae composing this fringe are relatively quite large, measuring 3 and 4 mm. in length. The under surface of the tongue is transversely wrinkled, but otherwise presents nothing of noteworthy interest.

The Circumvallate Papillae. — These papillae appear to be of nearly equal size. Their upper surfaces are smooth and unmarked by elevations, and do not rise above the level of the adjacent lingual surface. Their sides curve downwards and inwards, and the fossa encircling each is deep, narrow, and quite uniform in width. Mucous and serous glands are quite plentiful, the latter penetrating the sub-mucosa a considerable depth. The ducts of the serous glands open at the sides and ~~below~~^{below} of the trench.

The taste-bulbs of this area are disposed at the sides in a girdle of six or seven tiers, the uppermost tier being well up towards the summit of the papilla. Judging from horizontal and vertical sections there appear to be about 380 bulbs for each papilla. The bulbs are fairly uniform in shape, and measure 0,054 mm. in length, their greatest transverse diameter being 0,024 mm. (The shape of the bulbs is shown in figure 2).

The Papillae Foliatae. — The lateral gustatory organ of *S. hudsonius* consists of nine bulbbearing folds, separated by furrows of a fairly uniform breadth and depth. Near the summit of each fold the mucosa almost invariably divides into two secondary portions, leaving a central depression between. This depression is more or less filled with stratified pavement epithelium. Serous glands are very abundant beneath the folds, and even occur within them. Their ducts open at the sides and bottom of the furrows. The taste-bulbs of the papilla foliata nearly fill the sides of the folds. The tiers, which are usually quite closely set, range in number (relatively) from seven to ten. The number of bulbs in each lateral papilla is about 2260.

The Fungiform Papillae. — These papillae usually bear a single taste-bulb near their summit. The bulb is placed vertically in the long axis of the papilla, the basal end resting in a depression of the mucosa and the apex penetrating, but to all appearance not perforating, the outer layers of stratified epithelium. The bulbs of this region average 0,045 mm. in length, and are from 0,021 to 0,030 mm. in breadth. They appear to possess from six to eight taste-cells each.

On the anterior surface of the epiglottis, in about its lower fourth, are a number of bulb-like structures. The basal end and lower two-

fifths of one of the bulbs rest in a cavity of the mucosa. This bulb is spheroidal in form (see fig. 5), and measures 0,036 mm. in diameter. The largest bulb detected in this region (fig. 6) measured 0,045 mm. in diameter and was almost wholly epithelial in position. Bulbs were likewise present on the posterior surface of the epiglottis (fig. 7), but in size, shape, and general appearance, they varied but slightly from those of the anterior surface.

Explanation of Plate XI.

Reference Letters.

b Bulb. *d.l* Deep lamina of epithelium. *F* Furrow. *Fd* Fold of the papilla. *F.s* Free surface of the epithelium. *gl* Serous gland. *gl.d* Duct of serous gland. *m* Mucosa. *s.l* Superficial lamina of epithelium. *s.p* Secondary papillae. *F* Trench. *t.b* Taste-bulb.

Fig. 1 \times 60. Vertical section through one of the circumvallate papillae.

Fig. 2 \times 250. Vertical section through one side of the base of the same circumvallate papilla, showing the bottom of the trench and seven tiers of taste-bulbs. *t.b* Taste-bulb, the reference mark points to the apical end of the bulb.

Fig. 3 \times 35. Transverse vertical section through one of the papillae foliatae.

Fig. 4 \times 250. Vertical section through the summit of a fungiform papilla of the mid-dorsal region of the tongue, showing a single taste-bulb at its upper part.

Fig. 5 \times 250. Transverse vertical section through the lower part of the anterior surface of the epiglottis. *b* Bulb, lying partly in the epithelium and partly in the mucosa.

Fig. 6 \times 250. Transverse vertical section through the same region of the epiglottis. *b* Bulb, lying almost wholly in the epithelium.

Fig. 7 \times 250. Transverse vertical section through the lower part of the posterior surface of the epiglottis. *b* Bulb, embedded in the epithelium.

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